

ADDITIONAL NOTES ON THE GENUS *GMELINA*. VI

Harold N. Moldenke

GMELINA L.

Additional bibliography: Lour., Fl. Cochinch., ed. 1, imp. 2, 2: 376--377. 1967; V. & P. Singh, Journ. Econ. Tax. Bot. 2: 200. 1981; Shah & Gopal, Journ. Econ. Tax. Bot. 3: 362. 1982; Sharma, Journ. Econ. Tax. Bot. 3: 532. 1982; Yoganarasimhan, Togunashi, Keshav., & Govind., Journ. Econ. Tax. Bot. 3: 405. 1982; Mold., Phytologia 56: 154--182. 1984.

GMELINA ARBOREA Roxb.

Additional bibliography: V. & P. Singh, Journ. Econ. Tax. Bot. 2: 200. 1981; Shah & Gopal, Journ. Econ. Tax. Bot. 3: 362. 1982; Mold., Phytologia 56: 154, 168--171, 174, & 180. 1984.

Singh (1981) describes this species as a rare tree in forests, but commonly planted in gardens and parks in India, flowering there from April to June, noting that it "contains butyric acid, tartaric acid and saccharine matter". Shah & Gopal (1982) add that the ripe fruits are edible and the wood pulp is used in the paper industry in Gujarat (India).

GMELINA ASIATICA L.

Additional bibliography: Lour., Fl. Cochinch., ed. 1, imp. 2, 2: 376--377. 1967; Yoganarasimhan, Togunashi, Keshav., & Govind., Journ. Econ. Tax. Bot. 3: 405. 1982; Mold., Phytologia 56: 154, 167--169, 171, & 182. 1984.

Yoganarasimhan and his associates (1982) record an additional vernacular name for this species, "guldamara", and describe its economic uses in Karnataka (India) as "Roots demulcent, alterative, astringent, aromatic; used for rheumatism, gonorrhoea and catarrh of the bladder. Seeds contain fatty oil, sitosterol and colouring matter." Fernandes describes the plant as an "armed small tree, 10--15 feet tall", the corollas yellow, and found it in flower in February.

Additional citations: INDIA: Maharashtra: J. Fernandes 88 (W--3004197).

GMELINA BRASSII Mold.

Additional bibliography: Mold., Phytologia 56: 32--33. 1984.

The *Brass* 21915, cited below, was previously incorrectly cited by me as representing the very closely related *G. dalrympleana* var. *schlechteri* (H. J. Lam) Mold. Brass describes the plant as a canopy tree, 25 m. tall, the corollas white or pinkish, and the ripe fruit black. They encountered it in rainforest on limestone, at an altitude of 30--60 m., in flower and fruit in April.

Additional citations: NEW GUINEA: Papua: *Brass* 21915 (W--2603100) --isotype). MOUNTED CLIPPINGS: Mold., Phytologia 6: 324--325. 1957 (W).

GMELINA DALRYMPLEANA var. *SCHLECHTERI* (H. J. Lam) Mold.

Additional bibliography: Mold., *Phytologia* 56: 39--41. 1984.

The *Brass* 21915, mistakenly cited by me as this taxon in a previous paper, actually is the type collection of the closely related *G. brassii* Mold.

GMELINA DELAVAYANA Dop

Additional bibliography: Mold., *Phytologia* 56: 35, 41--43, & 108. 1984.

Additional citations: MOUNTED CLIPPINGS: W. W. Sm., *Notes Bot. Gard. Edinb.* 9: 107--108. 1916 (W).

GMELINA HAINANENSIS Oliv.

Additional bibliography: Mold., *Phytologia* 56: 154 & 175. 1984.

Taam describes this plant as an erect, woody shrub, 15--"26" feet tall, with fragrant flowers and "gray" fruit, referring to it as "rare, scattered" along roadsides, or abundant, in flower in May and in fruit in June.

Additional citations: CHINA: Kwangtung: *Taam* 635 (Mi, 808 (Mi)).

GMELINA PHILIPPENSIS Cham.

Additional bibliography: Lour., *Fl. Cochinch.*, ed. 1, imp. 2, 2: 376--377. 1967; Sharma, *Journ. Econ. Tax. Bot.* 3: 532. 1982; Mold., *Phytologia* 56: 161--173. 1984.

Sharma (1982) lists this species from East Punjab (India), but fails to state if wild or cultivated. He claims that it flowers there from April to August and cites his nos. 2676* & 4559.

Loureiro, in his *Flora Cochinchinensis*, identified this taxon with *G. asiatica* L., but with a question. He assigns to it Rumpf's *Radix Deiparae spuria*, Lowara, commenting that "Quamvis in figurâ Rumphianâ folia sint 3-loba, in nostrâ vero integerrima, non judicavi diversam speciem decernere, cum pleraque alia conveniant, imprimis corollae forma personata. Pro hoc genere, & specie a Celeb. Lin. citatur *Jambosa sylvestris parvi-folia*, (Rumph. 1. pag. 129. tab. 40.) quae procul-dubio *Eugeniae* species est, nullatenus *Gmelinae*."

In regard to its "virtues", he notes: "Calefaciens, Resolvens. Valent in doloribus articulorum, &c affectibus nervorum radix interne sumpta, folia externa applicata."

GMELINA RACEMOSA (Lour.) Merr.

Additional bibliography: Lour., *Fl. Cochinch.*, ed. 1, imp. 2, 2: 376--377. 1967; Mold., *Phytologia* 56: 173--176. 1984.

In view of the fact that Loureiro went so far astray in assigning this plant to the genus *Lantana*, it may be important to quote his original description here: "Cây Tlai. Differ. spec. Lant. foliis oppositis, sub-rotundis: caule arboreo inermi: tacemis terminalibus. H., & nota E. Arbor magna, ramis patentibus inermibus. Folia sub-rotunda, acuminata, integerrima, plana, glabra, dura, obscuroviridia, subtus albicantia, opposita, petiolis longis, basi glandulosis. Flos albus, magnus, racemis compositis, nudis, vastis, terminalibus. Cal. sub-truncatus, denticulis 4-5, minimis. Corolla campanulata, 5-fida, sub-aequalis. Drupa carnosa, turbinata, compressa, apice re-

tusa: nuce 2-loculari. Stamina Didynamica. De stigmatē (an unicum?) non amplius recordor. Habitat in sylvis Cochinchinae: ubi ejus lignum caeditur pro aedificiis." The vernacular name, "cây tlai", which he records, is not otherwise recorded for the species.

Additional citations: MOUNTED CLIPPINGS: Dop, Bull. Soc. Bot. France 61: 322. 1914 (W).

GMELINA UNIFLORA Stapf in Hook., Icon. Pl. 24: pl. 2391. 1895.

Synonymy: *Gmelina uniflora* var. *typica* Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 66. 1921. *Gmelina spectabilis* Ridl., in herb.

Bibliography: Stapf in Hook., Icon. Pl. 24: pl. 2391. 1895; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 185. 1902; H. J. Lam, Verbenac. Malay. Arch. 215, 217, & 366. 1919; Bakh. in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 3 & 64--68. 1921; E. D. Merr., Bibliog. Enum. Born. Pl. 515. 1921; Stapf, Ind. Lond. 3: 299. 1930; Fedde & Schust., Justs Bot. Jahresber. 53 (1): 1074. 1932; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 185. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 65 & 93 (1942) and ed. 2, 146 & 186. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 185. 1959; Mold., Résumé 192, 193, & 456. 1959; Mold., Fifth Summ. 1: 325 (1971) and 2: 880. 1971; Mold., Phytol. Mem. 2: 315 & 549. 1980; Mold., Phytologia 52: 23 (1982) and 55: 333 & 493. 1984.

Illustrations: Stapf in Hook., Icon. Pl. 24: pl. 2391. 1895.

A "small tree" or climber, to 20 m. long; stems cylindrical, to 8 cm. in diameter; bark smooth; branchlets yellowish-hairy, eventually glabrescent; leaves decussate-opposite; petioles 1.5--2.5 cm. long, yellowish-hairy, eventually glabrescent; leaf-blades membranous or chartaceous, broadly elliptic or obovate-elliptic, 7--15 cm. long, 4--10 cm. wide, apically obtuse or shortly acuminate, marginally entire, basally rounded or truncate, glabrous and shiny (except for the midrib) above, not pubescent but very densely white-glandular beneath, the glands very small, the larger venation sparsely short-pilose; secondaries 3 or 4 pairs, with some (usually 2) large concave glands beneath the lowest pair; flowers solitary in the axils of the upper leaves, pendulous; pedicels 1.2--2.1 cm. long; bractlets 2, broadly ovate, 1--4 cm. long, 0.5--2 cm. wide, opposite, more or less foliaceous, sessile, concave, apically obtuse or short-acuminate, basally obtuse or broadly rounded, often subcordate, surrounding or subtending the calyx, 8--10-veined; calyx 2--2.5 cm. long, 7--12 mm. wide, 5-laciniate to about 1/3 its length, the lobes large, deltoid, 7--10 mm. long, 5--7 mm. wide, externally hirsute-hairy with dark-brown hairs, sometimes sparsely white-glandular; corolla yellowish-white or pale-yellow, dark-yellow on the inside of the throat, externally softly hairy and white-glandular, the tube 2.5 cm. long, the limb bilabiate, the upper lip with 2 small semicircular lobes, the lower lip with 2 semicircular and 1 (the middle) enlarged to 1 cm. in length; stamens included; style slender, about 3 cm. long; stigma shortly bifid, the lobes subulate; ovary apically narrowed and there covered with stiff hairs, 4-celled, 4-ovulate; fruit basally included by the enlarged fruiting-calyx, 2.5--3.2 cm. long.

Lam (1919) cites with a question *Haviland 919* from Borneo, of

which he saw only a sterile flowerless specimen which differed in its petioles being 2.5--3.5 cm. long and the leaf-blades oblong, 20--27 cm. long, 10 cm. wide, basally often subcuneate. Bakhuizen (1921) cites *Jaheri 526* for his *G. uniflora* var. *typica* from Borneo. He cites nothing else.

Van Steenis, in a personal communication to me, notes that "*Gmelina uniflora* Stapf is een liaan, fraaie klier a.d. blad-basis (schotelvormig) blad overstaand, triplinerf. Motley meent dat het small tree is aff. *G. spectabilis* Ridley."

Collectors have encountered this plant at 300--1300 feet altitude, growing in yellow sandy loam, in flower in April and in fruit in November. Kostermans refers to it as "rare".

Material has been misidentified and distributed in some herbaria as *Faradaya matthewsii* Merr.

Citations: GREATER SUNDA ISLANDS: Kalimantan: *Holttum 25116* (Bz--21337, Bz--21338, N); *Jaheri 526* (Bz--21339, Bz--21340); *Kostermans 10521* (N). Sarawak: *Garai s.n.* [10-2-1892] (Bz--21341). MOUNTED ILLUSTRATIONS & CLIPPINGS: Stapf in Hook., *Icon. Pl.* 24: pl. 2391. 1895 (Ut--74495).

GMELENA UNIFLORA var. *VILLOSA* Bakh. in Lam & Bakh., *Bull. Jard. Bot. Buitenz.*, ser. 3, 3: 66. 1921.

Synonymy: *Gmelina quadrifida* H. J. Lam, in herb.

Bibliography: Bakh. in Lam & Bakh., *Bull. Jard. Bot. Buitenz.*, ser. 3, 3: 66. 1921; Fedde & Schust., *Justs Bot. Jahresber.* 53 (1): 1074. 1932; Mold., *Résumé* 193 & 456. 1959; Mold., *Fifth Summ.* 1: 325 (1971) and 2: 880. 1971; Mold., *Phytol. Mem.* 2: 315 & 549. 1980; Mold., *Phytologia* 55: 333. 1984.

This variety differs from the typical form of the species in its leaf-blades being longer and wider, hirtellous above with sparse, long, simple hairs, densely pilose on the larger venation, subvillous beneath, the venation softly pilose, more densely glandular-punctate, basally scarcely or hardly at all glanduliferous, the secondaries 4--7 per side, basally subplinerved, the petioles to 6 cm. long, and the inflorescences 1--3-flowered.

The branchlets are densely ferruginous-tomentose, in age only densely resinous-punctate and sparsely lenticellate, the internodes glabrous; petioles terete, 1.5--6 cm. long, densely ferruginous-villous, obsoletely sulcate above; inflorescence axillary, solitary or paired, short-pedunculate, 1--3-flowered; peduncles 6.5--10 mm. long, densely rufous-tomentose; bracts and bractlets foliaceous, subsessile, lanceolate, 7--15 mm. long, 2.5--3 mm. wide, apically acute, hiding the calyx, rufous-tomentose on both surfaces; calyx infundibular, 1.5--2 cm. long, 5--10 mm. wide, externally rufous-pubescent and sparsely glandulose, internally very densely villous, unequally 5-laciniate, the segments deltoid, 5--10 mm. long, 2.5--3 mm. wide, apically acute, adhering to each other; corolla large, unequally 5-laciniate, the tube basally externally glabrous, apically densely pilose, internally glabrous, the lower 1/3 attenuate, apically abruptly campanulate and subventricose-ampliate, 2.5--3.5 cm. long or twice as long as the calyx, the limb subbilabiate, the upper lip 2-lobed, the lobes broadly ovate, 5--7 mm. long, apically obtuse

to rounded, the lower lip 3-lobed, the 2 lateral lobes similar to those on the upper lip, but the central one larger, 7--10 mm. wide; stamens didynamous, scarcely exerted, the shorter pair 10--12 mm. long, the longer pair 15--17 mm. long; filaments all basally laterally compressed and glabrous, apically incurved and sparsely glandular-hirsute; anthers introrse, bilocular, dorsifixed near the apex, the thecae widely divaricate basally, 3--3.5 mm. long, resinous-punctate; style filiform, terete, 2.5--3.5 cm. long, scarcely exerted, apically incurved; stigma obscurely and unequally bifid, pseudo-subulate; ovary sessile, ovate, apically externally villous and glandular-punctate, 4-locular, each cell 1-ovulate; fruiting-calyx somewhat expanded radially, unilaterally incised almost to the base; fruit drupaceous, medium-sized, oblong or obovate, 2.5--3.5 cm. long, 1.5--2 cm. wide, fleshy, apically externally densely farinose, eventually glabrescent, the endocarp thickly woody.

This variety is based on *Jaheri 1109, 1300, & 1463* from Soengei Bloe-oe, Borneo, deposited in the Buitenzorg herbarium.

Citations: GREATER SUNDA ISLANDS: Kalimantan: *Jaheri 1109* (Bz--21347--cotype), *1300* (Bz--21345--cotype, Bz--21346--cotype, N--cotype), *1463* (Bz--21342--cotype, Bz--21343--cotype, Bz--21344--cotype, Ld--photo of cotype, N--photo of cotype).

Gmelina? VESTITA Wall., Numer. List 49 [=50], no. 1820 hyponym. 1829.

Bibliography: Wall., Numer. List 49 [=50], no. 1820. 1829; Schau. in A. DC., Prodr. 11: 680. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 200. 1858; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 1040 (1893) and imp. 2, 1: 1040. 1946; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 127 & 186. 1949; Mold., Résumé 163 & 456. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 1040. 1960; Mold., Fifth Summ. 1: 276 (1971) and 2: 880. 1971; Mold., Phytol. Mem. 2: 263 & 550. 1980.

Nothing is known to me of this plant except that Wallich (1829) bases the name on a collection from Kyunk-Talong on the Irrawaddy, a 1250-mile long river in Burma, emptying into the Bay of Bengal, collected in 1826, but without fruit. The type is probably deposited in the East India Company herbarium at Kew.

Schauer (1847) also regarded this species as a doubtful member of the genus, although Jackson (1893) seems to accept it without question.

Gmelina VITIENSIS (Seem.) Seem., Viti 440 nom. nud. 1862; Mold., Alph. List Inv. Names 56. 1942; A. C. Sm., Allertonia 1: 414. 1978

Synonymy: *Gmelina vitiensis* Seem., Viti. 440 nom. nud. 1862. *Vitex (Euagnus) vitiensis* Seem., Fl. Vit. 190, pl. 45. 1866. *Vitex vitiensis* (Seem.) Seem. ex Mold., Alph. List Inv. Names 56 in syn. 1942.

Bibliography: Seem., Viti 440. 1862; Seem., Fl. Vit. 190--191, pl. 45. 1866; Horne, Year Fiji 269. 1881; Drake del Castillo, Illustr. Fl. Ins. Mar. Pacif., imp. 1, 260 & 432. 1886; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 1040 (1893) and imp. 1, 2:

1214. 1895; Stapf, Ind. Lond. 6: 479. 1931; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 69 & 93. 1942; Mold., Alph. List Inv. Names 56. 1942; H. B. R. Parham, Fiji Nat. Pl. 68. 1943; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 1040 (1946) and imp. 2, 2: 1214. 1946; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 151 & 186. 1949; A. C. Sm., Journ. Arnold Arb. 36: 287. 1955; Mold., Résumé 207, 391, & 456. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 1040 (1960) and imp. 3, 2: 1214. 1960; J. W. Parham, Pl. Fiji Isls., ed. 1, 214, fig. 77. 1964; Uphof, Dict. Econ. Pl., ed. 2, 246. 1968; Mold., Fifth Summ. 1: 343 (1971) and 2: 731 & 880. 1971; J. W. Parham, Pl. Fiji Isls., ed. 2, 300, fig. 90. 1972; Drake del Castillo, Illust. Fl. Ins. Mar. Pacif., imp. 2, 260 & 432. 1977; A. C. Sm., Allertonia 1: 414--415. 1978; Mold., Phytol. Mem. 2: 333 & 550. 1980; Mold., Phytologia 55: 333 & 468. 1984.

Illustrations: Seem., Fl. Vit. pl. 45 (in color). 1866; J. W. Parham, Pl. Fiji Isls., ed. 1, 214, fig. 77 (1964) and ed. 2, 300, fig. 90. 1972.

A tall tree, to 27 m. tall, with a trunk diameter to 75 cm.; leaves simple, decussate-opposite; petioles 1.2--2.4 cm. long; leaf-blades ovate or ovate-oblong, 7.5--12.5 cm. long, 3.5--6.5 cm. wide, apically acuminate, glabrescent; inflorescence paniculate, terminal, the cymes pedunculate, erect, narrow; calyx cyathiform, the rim shortly and acutely 5-repand-dentate, externally puberulent; corolla showy, blue, bilabiate, externally puberulent, the upper lip 2-lobed, the lower lip 3-lobed; filaments puberulent; anthers ovate; stigma unequally bifid, the branches acute; ovary 4-celled.

This species is based on *Milne 224*, collected on Ngau, Fiji Islands, in October, 1855, and deposited in the Kew herbarium. Actually, Seemann (1866) merely cites an unnumbered Milne collection, but Smith (1978) has designated the Kew material of 224 (2 sheets) as holotype. He also asserts that the binomial, *Gmelina vitiensis* (Seem.) Seem., should be credited to my Known Geogr. Distrib. Verbenac., ed. 1, 69 (1942), but it only occurs there as *G. vitiensis* Seem. and is as truly a nom. nud. there as it is in Seemann's original 1862 work; similarly, in my Alph. List Inv. Names 56 (1942), which he also cites, the combination is not validly published in accordance with the provisions of the Code. It would appear to me that it was not validly made until by Smith himself in 1978. He comments that "Although *Gmelina vitiensis*, endemic to Fiji, is considered a good furniture wood and is a large tree 6--27 m. high, with a trunk diameter of 70--75 cm., it is not well represented in herbaria, only some 16 collections being known to me. These come from the islands of Viti Levu, Kandavu, Ngau, and Vanua Levu, where the tree occurs in dense forests at altitudes of 90--600 m."

Seemann (1866) comments that "Milne collected only one specimen of this singular plant, all the leaves of which are truly simple; but it may be that the species has also compound leaves, like most of its congeners. The unequal lobes of the stigma point to a certain relationship with *Gmelina*, but all the other characters are those of a genuine *Vitex*." Drawings, made by McDonald and on which Seemann's original illustration was based, are preserved on the holotype material at Kew.

Parham (1943) also refers to this plant as a moderately common, fine timber tree, which "Grows to great height in the forests of Bua. Timber suitable for furniture, etc." Uphof (1968) reports for *Gmelina arborea* Roxb. that "Parts of the plant form with the roots of *Epipremnum pinnatum* oro or awalho of the Fiji islanders", but it may be assumed that this Fiji reference is to *G. vitiensis*, the only *Gmelina* known from these islands.

The *J. P. Mead 2010*, distributed as *Gmelina vitiensis*, certainly is a misidentification.

Citations: FIJI ISLANDS: Viti Levu: A. C. Smith 5505 (Bi, N, N, S), 5822 (Bi, N, N, S). MOUNTED ILLUSTRATIONS: Seem., Fl. Vit. pl. 45, 1886 (Ld).

ADDITIONAL NOTES ON THE GENUS *CORNUTIA*. VIII

Harold N. Moldenke

CORNUTIA Plum.

Additional & emended bibliography: Plum., Nov. Cat. Pl. Amer. Gen. 32--33, pl. 17. 1703; J. Burm., Thes. Zeyl. 209. 1737; Lour., Fl. Cochinch., ed. 1, imp. 1, 2: 387. 1790; Link, Enum. Hort. Berol. 2: 127. 1822; Hubert, Trav. Lab. Med. Fac. Pharm. 13: [Verb. Util. Mat. Med.] 3. 1921; Lour., Fl. Cochinch., ed. 1, imp. 2, 2: 387. 1967; Mold., Phytologia 55: 276--278 & 507. 1984.

Plumier's original (1703) description of this genus is worth reproducing here, especially for its dedicatory paragraph:

"*Cornutia* est plantae genus flore A monopetalo, personato, cujus labium superius surrectum, inferius vero tripartitum; ex calyce autem C surgit pistillum, posticae floris parti B, ad instar clavi infixum, quod deinde abit in fructum, sed baccam D succi plenam, sphaericam, & semine E foetam plerumque reniformi. *Cornutiae* unicum speciem. *Cornutia* flore pyramidato caeruleo, foliis incanis. Clarissimus D. Jacobus, Cornuti D. Medicus Parisiensis, Canadensium plantarum, aliarumque nondum editarum Historiam conscripsit, adjectis iconibus; cui additum est ad Calcem Enchiridion Botanicum Parisiense, continens indicem plantarum quae in pagis, sylvis, pratis & montosis juxta Parisios locis nascuntur. Extat Opus Parisiis apud Sim. le Moyne, via Jacobaea 1635 - in quarto."

CORNUTIA COERULEA (Jacq.) Mold.

Additional bibliography: Link, Enum. Hort. Berol. 2: 127. 1822; Mold., Phytologia 55: 278. 1984.

CORNUTIA GRANDIFOLIA (Schlecht. & Cham.) Schau.

Additional bibliography: Mold., Phytologia 55: 278. 1984.

The corollas are described as having been "blue" on *Calzada 383 & 397*, *Croat 40597*, *Moreno 241*, *476*, *540*, & *1839*, and *Zelaya 107*, "lavender-blue" on *Croat 41933*, "blue-violet, the lower lip with a